



10/12/00

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10-13-00

A

Patent Application Transmittal

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BOX PATENT APPLICATION  
Washington, D.C. 20231

IBM DOCKET NO. AM9-99-0219

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jc916 U.S. PTO  
09/689076  
10/12/00

Sir:

Date: October 12, 2000

Transmitted herewith for filing is the Patent application of:

Inventor: **Kraft et al.**  
For: **PLATFORM FOR INTERNET BASED REAL-TIME COMMUNICATION CONTENT SELECTION**

Enclosed are:

- ☒ 3 sheets of drawings.
- ☒ An assignment of the invention to International Business Machines Corporation, Armonk, New York 10504.
- ☐ A certified copy of a \_\_\_\_\_ application.
- ☒ Declaration and Power of Attorney.
- ☒ Information Disclosure Statement with copies of cited references.

The filing fee has been calculated as shown below:

	(Col. 1)	(Col. 2)
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Basic Fee		
Total Claims	20- 20 =	0
Independent Claims	5- 3 =	2
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on **October 12, 2000**

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APPLICATION INFORMATION				
Title of the Invention				
PLATFORM FOR INTERNET BASED REAL-TIME COMMUNICATION CONTENT SELECTION				
Total Drawing Sheets	3	<input type="checkbox"/> Formal Drawings	<input checked="" type="checkbox"/> Informal Drawings	
Application Type	Utility		Docket Number	AM9-99-0219
Licensed U. S. Govt. Agency	Contract or Grant No.		Secrecy Order in Parent Application?	
			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Additional Govt. Agencies				
REPRESENTATIVE INFORMATION				
Representative Customer Number		22891		
Registration Number	Registration Number	Registration Number	Registration Number	Registration Number
Additional Representatives				
PRIOR FOREIGN APPLICATIONS				
Foreign Application No.	Filing Date (MMDDYYYY)	Country	Priority Claimed?	
			<input type="checkbox"/> Yes <input type="checkbox"/> No	
Additional Prior Foreign Applications				

00669036 101200

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[illegible]

CORRESPONDENCE INFORMATION

APPLICATION INFORMATION

REPRESENTATIVE INFORMATION

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Source::  PrintEFS  Version 1.0.1
```

# APPLICATION

## FOR

### UNITED STATES LETTERS PATENT

APPLICANT NAME: KRAFT ET AL.

TITLE: PLATFORM FOR INTERNET BASED  
REAL-TIME COMMUNICATION CONTENT SELECTION

DOCKET NO.: AM9-99-0219

INTERNATIONAL BUSINESS MACHINES CORPORATION

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# PLATFORM FOR INTERNET BASED REAL-TIME COMMUNICATION

## CONTENT SELECTION

### Background Of The Invention

#### 1. Field of the Invention

5           The present invention relates to information monitoring technologies in the context of real-time network or Internet communication, and in particular to a method and system for monitoring real-time communication on a computer network between at least two client computers connected by the network.

#### 10           2. Description of Related Art

          The seminal importance of the Internet as a generalized communication medium has been clear from the very outset. As the Internet has surged in popularity, however, it has begun manifesting itself in nontraditional ways, the scope of which had never been fully anticipated. In particular, with the exponential rise in the number of Internet users, 15       real-time Web based interaction, such as seen in Internet Chat, has emerged as an amazingly popular and persuasive mode of communication.

          On the Internet, the term chatting is used to refer to the act of "talking" by text or graphical communication to other people who are using the Internet at the same time. Typically, chatting involves the broadcast, multicast, or unicast of messages, typed in 20       real-time, among a group of users occupying the same space or channel (i.e., connected to the same server or related group of servers) on the Internet. The users themselves may be situated in different geographical locales and may be connected using any number of different client programs, browsers, or Internet service providers (ISPs). The key point is that a single Internet site (the "chat site") serves as a common repository for all messages. 25       Chats may be ongoing, or scheduled, and users may enter and leave the chat site at will.

          Typically, most chats are focused on a particular topic or theme. A given chat site may be a host to multiple chats, each corresponding to a different theme yet taking place at the same time in different "chat rooms" – which are essentially specialized sub-

domains within the broader chat-site. Hence, participants within the same chat-room generally share some common interest or concern, which brings them together.

Chats may be hosted by online services (such as America Online), by bulletin board services and by Web sites. Many Web sites, such as Talk City, in fact exist exclusively for the purpose of conducting chats. Most chat sites use a popular protocol called Internet Relay Chat (IRC) for client-server handshaking and subsequent client-server and client-client interaction. IRC was first made public in RFC 1459, released in May 1993. Besides the exchange of text messages, a chat may also include the use of sound and graphics, provided that the bandwidth capability and appropriate programming are accessible. Currently, most chat activity appears to be informal and recreational in nature. However, specialized channels where professionals exchange valuable opinions and engage in constructive dialogue are becoming increasingly prevalent.

Since, by its very nature, the content of chats is generated in real-time, it is very difficult, if not impossible to be able to classify the nature of the content exchanged in chat rooms in advance of joining the chat. Even though current chat servers attempt to classify their chat rooms using general heuristics such as "Adult", "Teenagers", "Kids" and the like, and to cluster rooms accordingly, the actual content exchanged within a given room is by no means guaranteed to conform to its predefined classification. The situation becomes even more complex when chat content includes non-text data, for example, audio or images. Surrounding text does not always indicate the content of the embedded file, allowing offensive audio or image material to slip through the ratings system. Occasionally, people deliberately even mislabel offensive audio or image files in order to mislead monitoring devices.

Content rating for static web pages, and also for dynamic pages (e.g., search result pages) is already done using various techniques. These include Internet filters such as Net Nanny and Cyber Patrol, and the method and system disclosed in U.S. patent application serial no. (docket no. AM9-99-040) entitled "Automatic" Rating and Filtering of Data Files for Objectionable Content."

Even though Internet chat is increasingly being used by people as a form of informal communication, no general technique has been developed which can use a uniform criteria to provide an objective and accurate rating for the content exchanged during such discourse in real-time, and which can subsequently manifest as an Internet portal for chat rooms clustered according to such ratings. Since the content of chat rooms (or any other such form of Internet based real-time communication) is highly dynamic, even if static ratings are specified for such rooms, there is no guarantee that the static rating is actually representative of the content (i.e., text or graphics) currently being exchanged. Moreover, any classification which may be provided by the chat-host server are often very subjective, and such classifications are not comparable across multiple hosts, since the classification criteria may vary from source to source. Hence there is the compelling need for a service that can dynamically deduce ratings of objectionable or other type material in real-time and which uses a standardized, uniform rating criteria, such that comparison among ratings is meaningful.

Bearing in mind the problems and deficiencies of the prior art, it is therefore an object of the present invention to provide a method of monitoring real-time communication on a computer network between at least two client computers connected by the network.

It is another object of the present invention to provide a method of monitoring real-time communication between client computers over a network which establishes a uniform rating system.

A further object of the invention is to provide a real-time rating system for users of Internet chat rooms which alerts the users of objectionable material prior to joining the chat.

Still other objects and advantages of the invention will in part be obvious and will in part be apparent from the specification.



### Summary of the Invention

The above and other objects and advantages, which will be apparent to one of skill in the art, are achieved in the present invention which is directed to, in a first aspect, to a method of monitoring real-time communication on a computer network between at least two client computers connected by the network comprising first providing a database of keywords, with each of the keywords linked to a predefined rating. The method then includes monitoring real-time communication on a computer network between at least two client computers connected by the network; detecting the keywords in the real-time communication; and determining for the real-time communication a rating level based upon the predefined rating of the keywords. The keyword may consist of text, audio, video and graphical communication, for example. Preferably, the rating level of the real-time communication is conveyed to at least one of the client computers. More preferably, at least one additional client computer receives the real-time communication, and the rating level of the real-time communication is conveyed to the at least one additional client computer.

Determination of the rating level for the real-time communication may occur simultaneously with the real-time communication, and may be based on evaluation of individual ratings of a plurality of different keywords. The method may further include terminating the real-time communication of at least one of the client computers based upon the rating level.

The method may also include predetermining at a first of the at least two client computers a maximum rating level at which the real-time communication may be maintained. If one or more keywords are originated at a second of the at least two client computers, the method then triggers a rating level above the maximum rating level, and terminates real-time communication of the first client computer.

Further, the method may include predetermining a maximum rating level at which the real-time communication may be maintained. If one or more keywords are originated at one of the client computers which triggers a rating level above the maximum rating level; the method then identifies the one client computer originating the keyword above

the maximum rating, and/or terminates real-time communication of the one client computer.

The rating level determined for the real-time communication may be continuously updated, for example, based upon the highest keyword rating within a selected time  
5 period, based upon a weighted average of keyword ratings within a selected time period, or based upon highest and lowest keyword ratings within a selected time period.

The method may also include connecting a subsequent client computer to the network without establishing real-time communication, viewing at the subsequent client computer the rating level of the real-time communication, and connecting the subsequent  
10 client computer to the real-time communication based upon the rating level.

Separate real-time communication occurs between different groups of client computers, wherein the method includes determining a rating level for the real-time communication for each group of client computers.

In another aspect, the present invention provides a method of monitoring real-time  
15 communication on a computer network between at least two client computers connected by the network comprising first providing a real-time communication monitoring system on a computer network including a database of keywords, with each of the keywords linked to a predefined rating. The system is adapted to: i) monitor real-time communication between at least two client computers connected by the network; ii)  
20 detect the keywords in the real-time communication; and iii) determine for the real-time communication a rating level based upon the predefined rating of the keywords. The method then includes connecting a subsequent client computer to the network without establishing real-time communication with the at least two client computers; viewing at  
25 the subsequent client computer the rating level of the real-time communication between the at least two client computers; and connecting the subsequent client computer to the real-time communication based upon the rating level.

In a further aspect, the present invention provides a system for monitoring real-time communication on a computer network between at least two client computers connected by the network comprising a database of keywords, each of the keywords

linked to a predefined rating; means for monitoring real-time communication on a computer network between at least two client computers connected by the network; means for detecting the keywords in the real-time communication; and means for determining for the real-time communication a rating level based upon the predefined rating of the keywords.

In a related aspect, the present invention provides a computer program product for monitoring real-time communication on a computer network between at least two client computers connected by the network comprising a database of keywords, each of the keywords linked to a predefined rating; program code means for monitoring real-time communication on a computer network between at least two client computers connected by the network; program code means for detecting the keywords in the real-time communication; and program code means for determining for the real-time communication a rating level based upon the predefined rating of the keywords.

In yet another aspect, the present invention provides a program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for monitoring real-time communication on a computer network between at least two client computers connected by the network using a database of keywords, with each of the keywords linked to a predefined rating. The method comprises monitoring real-time communication on a computer network between at least two client computers connected by the network; detecting the keywords in the real-time communication; and determining for the real-time communication a rating level based upon the predefined rating of the keywords.

#### **Brief Description of the Drawings**

The features of the invention believed to be novel and the elements characteristic of the invention are set forth with particularity in the appended claims. The figures are for illustration purposes only and are not drawn to scale. The invention itself, however, both as to organization and method of operation, may best be understood by reference to

the detailed description which follows taken in conjunction with the accompanying drawings in which:

Fig. 1 is a schematic representation of the Live Information Selection and Analysis "LISA" tool employed in connection with the present invention.

5 Fig. 2 is a pictorial representation of a typical graphic display using LISA.

Fig. 3 is a schematic representation of the typical components of the present invention as used for real-time communication content selection as connected to the Internet.

#### 10 Description of the Preferred Embodiment(s)

In describing the preferred embodiment of the present invention, reference will be made herein to Figs. 1-3 of the drawings in which like numerals refer to like features of the invention. Features of the invention are not necessarily shown to scale in the drawings.

15 The present invention generally provides a method for rating and classifying data for objectionable or other content which is continuously available a user at a client computer. More particularly, it relates to methods for automatically and continuously rating and filtering data presented in the context of real-time Internet based communication, such as chat sessions, and then dynamically classifying the underlying  
20 data channels on a portal site, intended to be used as an entry point to these channels.

In its preferred embodiment, the present invention involves an improvement to the patent application "System and Techniue for Dynamic Information Gathering and Targeted Advertising in a Web Based Model Using a Live Information Selection and Analysis (LISA) Tool, U.S. patent application serial no. 09/511,846 filed on February 24,  
25 2000, the disclosure of which is hereby incorporated by reference. While the present invention may be generalized to any mode of real-time communication on the Internet, the non-limiting example presented herein will focus specifically on the case of Internet chat.

As shown in Fig. 1, in a first aspect, the Live Information Selector and Analyzer (LISA) 90 may typically comprise the following components:

- A) User Interface-10
- B) Connection and Collection Manager-12
- 5 C) Indexing Manager-14
- D) Summary Manager-16
- E) Database Manager-18
- F) Query Manager-20

The functionality of each of the typical LISA system components is as follows:

10 User Interface 10: User Interface 10 is the component of the system which will directly interact with the user or client computer 11. All interaction between LISA and the user is mediated by the user interface 10. The user interface 10 is responsible for getting crucial configuration parameters from the user and initializing the other components of the system as appropriate.

15 The user interface 10 prompts the user for the address of the server 22 where the real-time communication of interest is being held. The user has the option of either specifying a URL to be accessed using the Hyper Text Transmission Protocol ("HTTP"), or may choose to simply give the address of an Internet relay chat ("IRC") server to be accessed directly, using a sockets-based connection employing Transmission Control  
20 Protocol/Internet Protocol ("TCP/IP"). Depending upon the user's choice, the user interface 10 automatically prompts the user for all other relevant parameters necessary to establish the connection. For instance, the user may be prompted to enter a screen-name, by which LISA should register with the chat server if the server 22 requires such a specification, and other such essential information.

25 The user interface 10 also allows the user to optionally customize the indexing and summarizing operations, and personalize these according to the user's preferences. For instance, the user may wish to explicitly specify the attributes that ought to be included in a summary, and can thus augment or override the default options. The user

may also customize the graphical presentation and formatting of the data and the search query results using the user interface 10.

Connection and Collection Manager 12: The Connection and Collection Manager 12 is a software component of LISA which is responsible for actually connecting to the  
5 server of interest and then collecting the relevant information.

Depending upon the user's specifications, Connection and Collection Manager 12 can connect to server 22 of interest in one of two ways:

URL Based Connection using HTTP: In this case the user will specify a string of the form "http://...." The Connection and Collection Manager 12 may then use  
10 Java Networking tools to open a "URL connection" to the server. In many cases, this will require that the user should already have registered manually with the server, and have specified a user-name and password with which to initiate the connection.

The Connection and Collection Manager 12, to an extent, emulates a Web  
15 browser, which would be the normal way to connect to a server using HTTP. In order to accomplish this, the Connection and Collection Manager 12 intercepts all "cookies" sent from the server (which thinks that it is connected to a browser), and extracts the name and value fields of these cookies.

"Cookies" are a way for a server (or a servlet running on a server) to send  
20 information to a client computer to store, and for the server to later receive its data from that client computer. Servlets send cookies to clients by adding fields to HTTP response headers. Clients (or client computers) are expected to automatically return cookies by adding fields to HTTP request headers. Each HTTP request and response header is named and has a single value. For example,  
25 a cookie could have a header named "chatRoom" with a value "Politics", indicating to the calling application that the user wants to join the chat room called "Politics". For all future HTTP requests made to the server, the Connection and Collection Manager 12 adds the appropriate fields to HTTP request headers, thus emulating a browser application.



Socket Connection using TCP/IP: The limitation of a URL based connection using HTTP is that it is not generalizable to all servers, and can require significant user configuration. Additionally, in the URL-based connection model a chat server may insist on sending an applet to the Connection and Collection Manager 12 since, in this model, the Connection and Collection Manager 12 appears to be a Web browser. In such cases, a URL-based approach will not work, unless the functionality of the Connection and Collection Manager 12 is extended to allow it to accept and execute applets that communicate with servlets.

A socket based connection using TCP/IP overcomes many of the limitations of a URL-based approach, and is far more general. Typically, a socket-based approach is the preferred connection method for LISA.

The vast majority of Internet chat servers follow the Internet Relay Chat protocol. LISA's socket-based approach involves a direct socket connection to the server 22, and registering and connecting using standard IRC commands. The user will still, however, need to explicitly specify the name of the server to connect to, the port to connect at (usually in the range of 6666-7000 for IRC chat servers), what screen-name LISA should be visible as, which room to join, and other such essential parameters.

In attempting to open a socket-based connection to a server (say “chat.cnn.com,” at port 7000), the Connection and Collection Manager 12 preferably follows the sequence of steps:

- (i) Connection and Collection Manager 12 opens an input and output socket to the server, for reading and writing purposes respectively.
- (ii) Connection and Collection Manager 12 attempts to send the server a command indicating that it wants to connect. For instance, it can send the server a “NICK” message. A “NICK” message is used to give a client a nickname or change the previous one. The syntax of a “NICK” command is: “NICK <desired nickname>.”



(iii) Upon receiving a "NICK" command, the server becomes cognizant of the presence of the Connection and Collection Manager 12. The server then sends the Connection and Collection Manager 12 a unique session ID that identifies the client for this chat session. Specifically, the server sends the Connection and Collection Manager 12 a message of the form "PING <unique session id>."

(iv) Having received a "PING" message from the server, the Connection and Collection Manager 12 must respond with a corresponding "PONG" message of the format: PONG <unique session id>. This confirms to the server that the client is alive and that the client is aware of the unique session ID that has been allocated to it.

(v) Immediately after sending the PONG response, the Connection and Collection Manager 12 must complete "registration" with the server now that it knows how to identify itself (using the allocated unique session ID). A client is considered to be "registered" after both a valid NICK and USER command have been received from the client. As such, the Connection and Collection Manager 12 now sends the server a USER message to complete registration (the NICK message had already been sent in step (i)). The USER message is used at the beginning of connection to specify the username hostname, servername and realname of a new user. Hence the Connection and Collection Manager 12 will send a USER message of the form: "USER <username> <hostname> <servername> : <real firstname> <real lastname>."

Since it is easy for a client to lie about its username by relying solely on the USER message, many chat servers will actually attempt to verify the client's identity using an "Identity Server". If the host which a user connects from has such a server enabled, the user name is set to that in the reply from the "Identity Server". In the event that Identity server verification is not possible, some chat servers will refuse to allow the

client to connect. Others will be more lenient, and will simply prefix the username of the client with a tilde ("~"), or other such distinguishing character to indicate that the client has not been authenticated, and allow the client to connect.

- 5 (vi) Having registered, the Connection and Collection Manager 12 must specify which chat room it wishes to join, by sending a JOIN command to the server. The syntax of the JOIN command is in the form: "JOIN #<desired room name>."

10 Provided that the room exists, the server 22 now connects the Connection and Collection Manager 12 as a chat participant within the specified room, where it will be visible with the desired NICK name specified as part of the NICK command in part (i).

15 Once the Connection and Collection Manager 12 has successfully connected with server 22, it will appear to be an ordinary client, and will be able to listen to all messages being broadcast by other clients as part of their real-time communication.

20 Depending upon user specifications, LISA may be completely passive, in that it only listens, and never actually says anything. In this event, this inactivity will most likely be noticed by the chat server. When a chat server detects a client that has been inactive for more than a certain amount of time, it will either "PING" the client to see whether it is still "alive" or will simply log the client out. As such, LISA can be adapted to either respond to "PING" requests with corresponding "PONG" replies, or can simply detect when it has been logged out, and immediately log back in. This preference can be specified by the user. LISA  
25 can detect whether it has been logged out when nothing is heard for a certain amount of time (which will be user-specified), or when an exception occurs in reading from the socket or URL, implying that the socket or URL connection no longer exists.



Database Manager 18: Database Manager 18 stores the summarized data into a back-end database. Further Database Manager 18 notifies the User Interface 10 of the addition that has been made to the database 26, and the user interface 10 updates its graphical display, so that the data being summarized in real-time is immediately visible to the user. The Database Manager 18 is responsible for managing all storage activity, and referencing the stored data so as to make it accessible for rapid retrieval.

The Database Manager 18 may have search engine capability built into it. This will enable Database Manager 18 to search the contents of the database to retrieve entries that match the specifications of the Query Manager 20, whenever a search query is initiated by the user.

Query Manager 20: Query Manager 20 permits the user to query the contents of the database by searching for the occurrence of one or more keywords. When the user enters a search query, Query Manager 20 queries Database Manager 18 with the keywords. Subsequently, Database Manager 18 returns a list, whose elements are pointers to database entries (as opposed to the physical entries themselves). Query Manager 20 then notifies the User Interface 10, which displays these results to the user in a separate window from that in which all the summarized content of the online communication is being displayed.

Furthermore, the query entered by the user is persistent. This means that as the contents of the database change, Database Manager 18 preferably “remembers” the last query made by the Query Manager 20, and notifies Query Manager 20 if any newly added data matches the query specification. In turn, Query Manager 20 will notify User Interface 10, which will dynamically update the graphical “query results” display being seen by the user, thus reflecting the addition to the database in real-time.

Query Manager 20 can also be configured to handle multiple queries at the same time. In the event that the user specifies more than one query, Query Manager 20 will merely spawn off multiple (synchronized) threads, with each thread of execution corresponding to a unique query. In this case, all of these queries will be persistent. The advantage of implementing the Query Manager 20 using threads is that this allows Query

Manager 20 to process multiple search queries in parallel, without interrupting the operation of any other component of the system.

Fig. 2 is a pictorial illustration of a typical interactive graphic display that LISA can present to a user. For example, LISA has been configured to monitor the real-time communication in a chat room. The current activity in the chat room is illustrated in screen 100. As seen in screen 100, the typical parameters that can be monitored and stored by LISA are the message number 102, the time 104, the user name 106, the user's e-mail address 108, the URL for the user's server 110, and the message text 112. In this example, LISA was started at 17:59:12. The user can then prompt LISA and query 120 the stored results for the occurrence of the keyword "IBM." The results of query 120 are displayed in screen 122. Each message that LISA detected and stored that includes the keyword "IBM" is displayed, along with the specified parameters.

The present invention permits real-time rating, classification and subsequent clustering of chat rooms based upon the discourse content. By exploiting the functionality inherent to LISA, it will be able to monitor the conversation being held in any given chat session, or any other such form of real-time communication on the Internet. The present invention works by extracting and analyzing the summary information generated by LISA. Specifically, based upon the specifications of the system user or client, the invention looks for the temporally contiguous occurrence of a particular keyword or set of keywords. (Unless otherwise specified, the term "user" refers to the human operator of the present system, while the term "client" refers to a human participant in the live online communication at a client computer attached to the network.) The appearance of such keywords will be used to rate the language and theme of the conversation. As messages continue to be exchanged, the system computes a rating for each message and preferably maintains a running, weighted average of these ratings to compute an overall rating for the chat room.

Optionally, the invention may be configured to deal with non-text content such as audio and images. In the case of audio, standard voice recognition software can be used to convert such data into text. Text data can then be parsed and its content scanned for

keywords, as described above. In the case of video or graphical images, image processing software can be employed to recognize discrete objects in regions within an image file. Software systems are capable of using techniques known in the art, including filters, shape-based indexing, and matching using Daubechies' Wavelets to identify the discrete  
5 objects. These discrete objects become the analogs of keywords in text and audio content. In this case, the database of the present invention stores basic images of discrete objects that can be recognized by these software systems.

Using LISA's multithreaded capabilities, the system may monitor multiple chat rooms at the same time, and post the real-time computed ratings for the chat room onto a  
10 portal site. In addition to the current rating, the portal graphical user interface (GUI) more preferably also determines and displays a Rating History Graph (RHG) showing the history of ratings, as computed during an immediately completed selected time period, where the time period is specified by the user. The GUI may also determine and display the high and low ratings in the range of ratings computed during immediately completed  
15 selected time period, where this latter time period may also specified by the user, and be the same or different from the former time period. Optionally, the system may be configured to determine and display other comparative statistics of interest such as average rating, median rating, standard deviation, present multiple ratings for a single chat room by giving different weights to different types of content. For instance, a user at  
20 a client computer may want to see how the rating changes when images are given twice as much weight as text.

The computer program or software incorporating the process steps and instructions described further below may be stored in one or both of the client computer(s) or network computer or server, in conventional computer readable source or  
25 other program code, on an otherwise conventional program storage device, such as a semiconductor chip, a read-only memory, optically read media such as a CD- or DVD-ROM, or magnetic media such as a diskette or computer hard drive.

In its preferred embodiment, the present invention includes of the following major components:

- 1) User Interface (UI) - 10
- 2) LISA Interface (LI) - 80
- 3) Multimedia Content Summary Handler (MCSH) - 70
- 4) Summary Analyzer (SA) - 60
- 5) Message Rating Manager (MRM) - 50
- 6) Channel Rating Manager (CRM) - 40
- 7) Client Interface (CI) - 30

The function of each of these components is discussed below in connection with Fig. 3, which describes the novel combination of components of the present invention which are in addition to the Live Information Selector and Analyzer (LISA) components described in connection with Fig. 1.

#### User Interface (UI)

As described previously, the User Interface (UI) 10 represents the software component within the framework which will directly interact with the user of the system. All interactions between the user and the system are mediated by the UI. The UI is responsible for getting LISA configuration parameters directly from the user and propagating these to the LISA Interface (LI). The operation of the UI will require that the user specify sufficient parameters so that LISA is able to monitor, index and summarize the relevant information. Thus, for instance, in the case of an Internet chat session, the user would have to specify the URL of the chat room he or she is interested in, so that LISA knows where to look for the relevant data.

The UI is also responsible for prompting the user to specify keywords or sets of keywords (and basic images of discrete objects if rating of image content is also desire), and passing these on to the Summary Analyzer (SA). Additionally, a mapping must be specified by the user between keywords and ratings. The UI indexes all specified keyword-rating pairs in a back-end database, and informs the Summary Analyzer (SA) of the contents of this database as well as of the mapping between keywords and ratings. It should be noted that for non-text, multimedia message content, the term keyword

includes the appropriate analogous video or graphical unit, such as basic images of discrete objects in the case of images.

#### LISA Interface (LI)

5           The LISA Interface (LI) 80 software component links the framework of the present invention with the LISA application program. All interactions between the system and LISA are mediated by the LI. Using the LI, and the user-specified parameters obtained from the User Interface (UI), the system is able to configure the operation of LISA. In addition to configuring LISA with the appropriate parameters, the LI is  
10       responsible for collecting the summarized data output by LISA and propagating this onto the Multimedia Content Summary Handler (MCSH) 70.

#### Multimedia Content Summary Handler (MCSH)

          The Multimedia Content Summary Handler (MCSH) 70 is the component of the  
15       system that permits the successfully delineation of keywords in the message content or keyword analogs, when dealing with non-text, multimedia message content. The operation of the MCSH is dependent upon user specifications made through the UI. For non-text messages, the MCSH extracts or constructs the appropriate keyword analog. For instance, in the case of image content, the MCSH will employ techniques known in the  
20       art, such as filters, shape-based indexing, and matching using Daubechies' Wavelets to identify the discrete objects.

#### Summary Analyzer (SA)

          The Summary Analyzer (SA) 60 software component is responsible for  
25       dynamically analyzing the summary being output in real-time by LISA. In particular, the SA interfaces with a keyword database and checks for the occurrence of user specified keywords in the summaries that it analyzes. Based upon a partial or complete match with one or more sets of user-specified keywords, the SA determines that the summary in question is of relevance. Subsequently, the summary will be "marked" and passed on to



the Message Rating Manager (MRM) 50, along with a list of the keywords or sets of keywords that it was found to have matched.

#### Message Rating Manager (MRM)

5           The Message Rating Manager (MRM) 50 software component of the system actually determines what rating should be assigned to a particular message, exchanged in real-time in a chat room, which matches the user's specifications. The MRM maintains a user-specified mapping between keywords and ratings. In the event that a given message contains multiple keywords, which may map to different ratings, the MRM may construct  
10   a weighted, aggregate rating. The exact criteria and weighting to be used in the construction of this aggregate rating may be specified by the user via the UI. Alternatively, the user may choose to specify a ranking among the candidate ratings, and may wish to impose special conditions, such as requiring that the highest rating matched by any keyword in a given message should become the overall rating for the message.

15           Once the MRM has selected an acceptable rating, the MRM passes it on to the Channel Rating Manager (CRM) 40, along with the "marked" summary corresponding to the message. Additionally, the e-mail address, chat nickname and URL of the client computer originator of the message, if available from the summary generated by LISA, may also be propagated to the CRM by the MRM. Such information can then be used for  
20   higher level applications. For instance, chat host servers could use such information to identify disruptive and undesirable chatters, and subsequently take suitable action against them, such as terminating them from the chat room.

#### Channel Rating Manager (CRM)

25           The Channel Rating Manager (CRM) 40 software component of the system determines what overall rating should be assigned to the real-time communication channel (chat room) being monitored. The CRM maintains a running, weighted aggregated rating across all the individual message ratings produced by the MRM, to deduce a real-time, continuously updated, overall rating for the chat room. The exact

criteria and weighting to be used in the construction of this aggregate rating may be specified by the user via the UI. For instance, a simple weighting scheme may be to assign relative weights based on relative message lengths, or number of keywords encountered in the message. Alternatively, the user may choose to impose special  
5 conditions, such as requiring that the *highest* rating matched by any message during the past X minutes (where X is specified by the user) should become the overall rating for the room. Once the CRM has deduced a rating, the rating, along with the name of the chat room to which the rating corresponds to, will be sent to the Client Interface (CI) 30.

## 10 Client Interface (CI)

The Client Interface 30 is the component of the system which actually forms the link between the system and the real-time communication channel client, i.e., the human participant of a software application program being used by the participant. The CI is responsible for actually presenting the ratings generated by the system to the client  
15 computer.

In general, all interaction between the system of the present invention and the user is mediated by the UI, and each component interacts with the UI. The individual components of the present system are preferably arranged in an elegant, hierarchical layering which minimizes the necessary interactions, and thus provides robustness. Also,  
20 the flow of information is preferably strictly linear; information from the external real-time communication system is obtained using LISA, and information to the communication system is sent using the CI.

In particular, depending upon the user's specifications, the CI may present the rating information in many different forms, and in many different levels of detail. For  
25 instance, the user may specify that in addition to the current rating, the CI should also construct and present a Rating History Graph (RHG) showing the history of ratings, as computed during the past X minutes, where X is to be specified by the user. The CI may also deduce and present the "high" and "low" of ratings computed during the last Y minutes, where Y is to be specified by the user, and where Y may be the same or different

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from X. Similarly, the CI can be configured to dynamically compute and present other interesting comparative statistics such as average rating, median rating, standard deviation, present multiple ratings for a single chat room by giving different weights to different types of content (for instance, a given client may want to see the rating changes  
5 when images are given twice as much weight as text) etc. Furthermore, if the system of the present invention is implemented as a fee-based, restricted access service, an access control mechanism would also be implemented using the CI. The CI can either present such rating information via a Web portal gateway site in -human-interpretable format, or it can permit client application programs to directly interface with it, and provide this  
10 information in machine understandable form.

Preferably, all components of the system will make use of XML (Extensible Markup Language) for primary data representation and exchange. This will provide several advantages in terms of search features, interoperability with other third party applications and machine-to-machine data exchange.

15 The invention may be extremely valuable to chat room participants and chat hosts, as well as to other concerned third parties, such as parents of underage chat room participants, or employers of chatters connecting from the workplace, and the like. Potentially, the method and system of the present invention may be implemented as a third party fee-based Web service. The revenue model could either involve concerned  
20 parents and employers paying nominal fees to subscribe to the ratings, or could involve chat-room hosts employing the present invention to monitor and provide real-time ratings for their rooms. As such, a portal site using the present invention may become a chat-room guide for potential participants, who will be able to get a much more accurate and standardized comparison of the nature and theme of the content being exchanged in  
25 various chat-rooms, as compared to currently existing methods.

Further, a connection with the portal site of the present invention could be implemented as a plug-in within currently existing chat client programs or within Internet browsers. As such, all chat client-side software may have the option of interfacing and checking with the server maintaining the method and system of the present invention

before connecting to a given chat room. This could be extremely valuable for parents, who would be able to specify (password protected) acceptable thresholds of rating levels, according to which their children will either be given, or denied access to join a given online communication session. The crucial point to note is that the rating provided by the  
5 present method and system is continuously updated in real-time. The child will automatically be ejected from the chat room if at any moment its rating changes so as to violate the parent-specified threshold.

While the present invention has been particularly described, in conjunction with a  
10 specific preferred embodiment, it is evident that many alternatives, modifications and variations will be apparent to those skilled in the art in light of the foregoing description. It is therefore contemplated that the appended claims will embrace any such alternatives, modifications and variations as falling within the true scope and spirit of the present invention.

15 Thus, having described the invention, what is claimed is:

### Claims

- 1        1.        A method of monitoring real-time communication on a computer network  
2        between at least two client computers connected by the network comprising:  
3        providing a database of keywords, each of said keywords linked to a predefined  
4        rating;  
5        monitoring real-time communication on a computer network between at least two  
6        client computers connected by the network;  
7        detecting said keywords in the real-time communication; and  
8        determining for the real-time communication a rating level based upon the predefined  
9        rating of said keywords.
- 1        2.        The method of claim 1 wherein the rating level of the real-time communication is  
2        conveyed to at least one of the client computers.
- 1        3.        The method of claim 1 wherein at least one additional client computer receives  
2        the real-time communication, and wherein the rating level of the real-time  
3        communication is conveyed to the at least one additional client computer.
- 1        4.        The method of claim 1 wherein the determining of the rating level for the real-  
2        time communication occurs simultaneously with the real-time communication.
- 1        5.        The method of claim 1 wherein the determining of the rating level for the real-  
2        time communication is based on evaluation of individual ratings of a plurality of different  
3        keywords.
- 1        6.        The method of claim 1 further including terminating the real-time communication  
2        of at least one of the client computers based upon the rating level.

1 7. The method of claim 1 including predetermining at a first of the at least two client  
2 computers a maximum rating level at which the real-time communication may be  
3 maintained; originating one or more keywords at a second of the at least two client  
4 computers which triggers a rating level above the maximum rating level; and terminating  
5 real-time communication of the first client computer.

1 8. The method of claim 1 further including predetermining a maximum rating level  
2 at which the real-time communication may be maintained; originating one or more  
3 keywords at one of the client computers which triggers a rating level above the maximum  
4 rating level; and identifying the one client computer originating the keyword above the  
5 maximum rating.

1 9. The method of claim 1 including predetermining a maximum rating level at which  
2 the real-time communication may be maintained; originating one or more keywords at  
3 one of the client computers which triggers a rating level above the maximum rating level;  
4 and terminating real-time communication of the one client computer.

1 10. The method of claim 1 further including continuously updating the rating level  
2 determined for the real-time communication.

1 11. The method of claim 1 further including continuously updating the rating level  
2 determined for the real-time communication based upon the highest keyword rating  
3 within a selected time period.

1 12. The method of claim 1 further including continuously updating the rating level  
2 determined for the real-time communication based upon a weighted average of keyword  
3 ratings within a selected time period.

1 13. The method of claim 1 further including determining the range of the rating level  
2 determined for the real-time communication based upon highest and lowest keyword  
3 ratings within a selected time period.

1 14. The method of claim 1 further including connecting a subsequent client computer  
2 to the network without establishing real-time communication; viewing at the subsequent  
3 client computer the rating level of the real-time communication; and connecting the  
4 subsequent client computer to the real-time communication based upon the rating level.

1 15. The method of claim 1 wherein separate real-time communication occurs between  
2 different groups of client computers, and including determining a rating level for the real-  
3 time communication for each group of client computers.

1 16. The method of claim 1 wherein the keyword is selected from the group consisting  
2 of text, audio, video and graphical communication.

1 17. A method of monitoring real-time communication on a computer network  
2 between at least two client computers connected by the network comprising:  
3 providing a real-time communication monitoring system on a computer network  
4 including a database of keywords, each of said keywords linked to a predefined  
5 rating; the system adapted to: i) monitor real-time communication between at least  
6 two client computers connected by the network; ii) detect said keywords in the  
7 real-time communication; and iii) determine for the real-time communication a  
8 rating level based upon the predefined rating of said keywords;  
9 connecting a subsequent client computer to the network without establishing real-time  
10 communication with the at least two client computers;  
11 viewing at the subsequent client computer the rating level of the real-time  
12 communication between the at least two client computers; and

13 connecting the subsequent client computer to the real-time communication based  
14 upon the rating level.

1 18. A system for monitoring real-time communication on a computer network  
2 between at least two client computers connected by the network comprising:  
3 a database of keywords, each of said keywords linked to a predefined rating;  
4 means for monitoring real-time communication on a computer network between at  
5 least two client computers connected by the network;  
6 means for detecting said keywords in the real-time communication; and  
7 means for determining for the real-time communication a rating level based upon the  
8 predefined rating of said keywords.  
9

1 19. A computer program product for monitoring real-time communication on a  
2 computer network between at least two client computers connected by the network  
3 comprising:  
4 a database of keywords, each of said keywords linked to a predefined rating;  
5 program code means for monitoring real-time communication on a computer network  
6 between at least two client computers connected by the network;  
7 program code means for detecting said keywords in the real-time communication; and  
8 program code means for determining for the real-time communication a rating level  
9 based upon the predefined rating of said keywords.  
10

1 20. A program storage device readable by a machine, tangibly embodying a program  
2 of instructions executable by the machine to perform a method for monitoring real-time  
3 communication on a computer network between at least two client computers connected  
4 by the network using a database of keywords, each of said keywords linked to a  
5 predefined rating, the method comprising:



6 monitoring real-time communication on a computer network between at least two  
7 client computers connected by the network;  
8 detecting said keywords in the real-time communication; and  
9 determining for the real-time communication a rating level based upon the predefined  
10 rating of said keywords.  
11

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**PLATFORM FOR INTERNET BASED REAL-TIME COMMUNICATION  
CONTENT SELECTION**

**ABSTRACT OF THE DISCLOSURE**

A method of monitoring real-time communication on a computer network  
5 between at least two client computers connected by the network comprising first  
providing a database of keywords, with each of the keywords linked to a predefined  
rating. The method then includes monitoring real-time communication on a computer  
network between at least two client computers connected by the network; detecting the  
keywords in the real-time communication; and determining for the real-time  
10 communication a rating level based upon the predefined rating of the keywords. The  
keyword may consist of text, audio, video and graphical communication, for example.  
Preferably, the rating level of the real-time communication is conveyed to at least one of  
the client computers. More preferably, at least one additional client computer receives  
the real-time communication, and the rating level of the real-time communication is  
15 conveyed to the at least one additional client computer. Determination of the rating level  
for the real-time communication may occur simultaneously with the real-time  
communication, and may be based on evaluation of individual ratings of a plurality of  
different keywords. The method may further include terminating the real-time  
communication of at least one of the client computers based upon the rating level.

20

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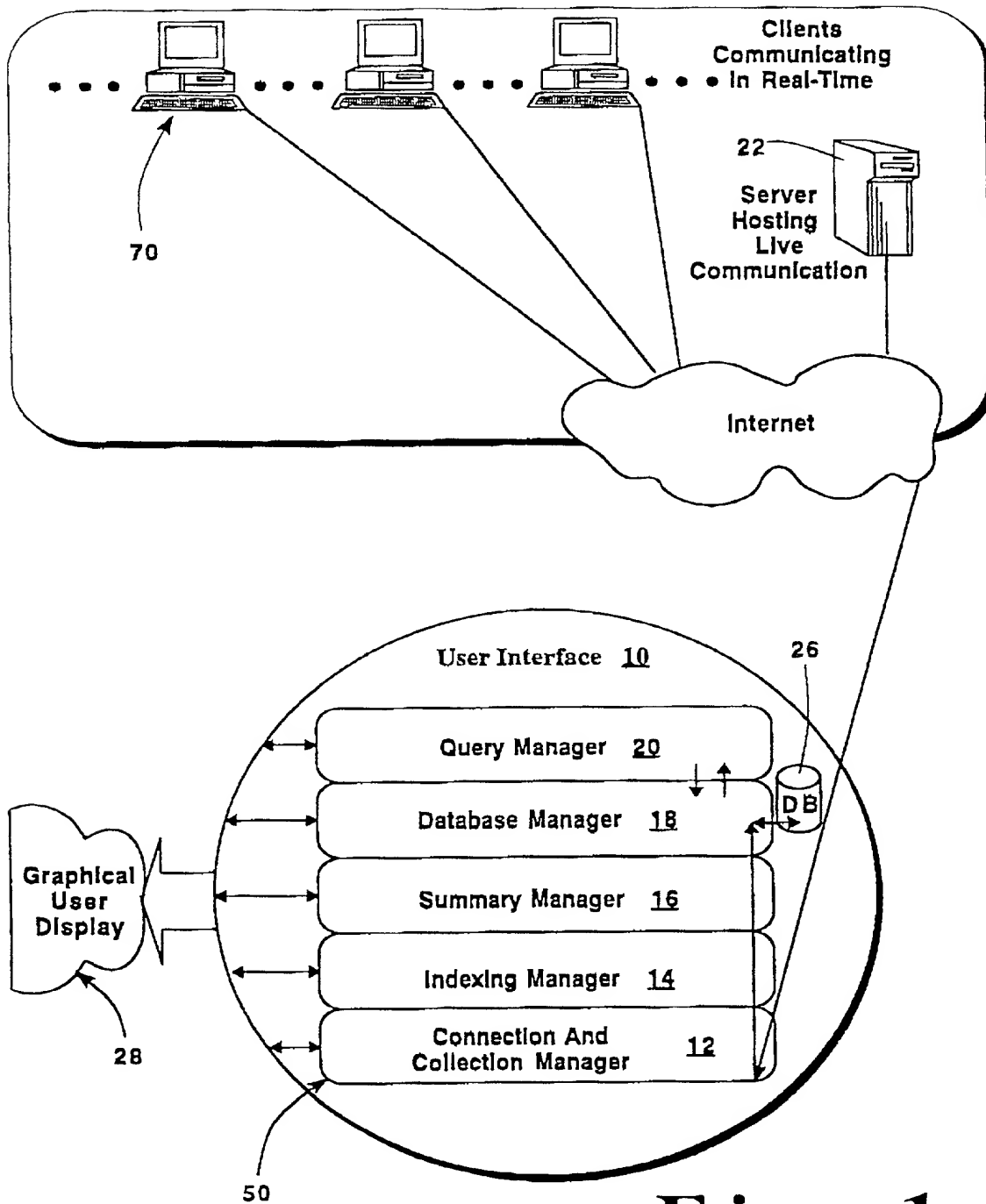


Fig. 1

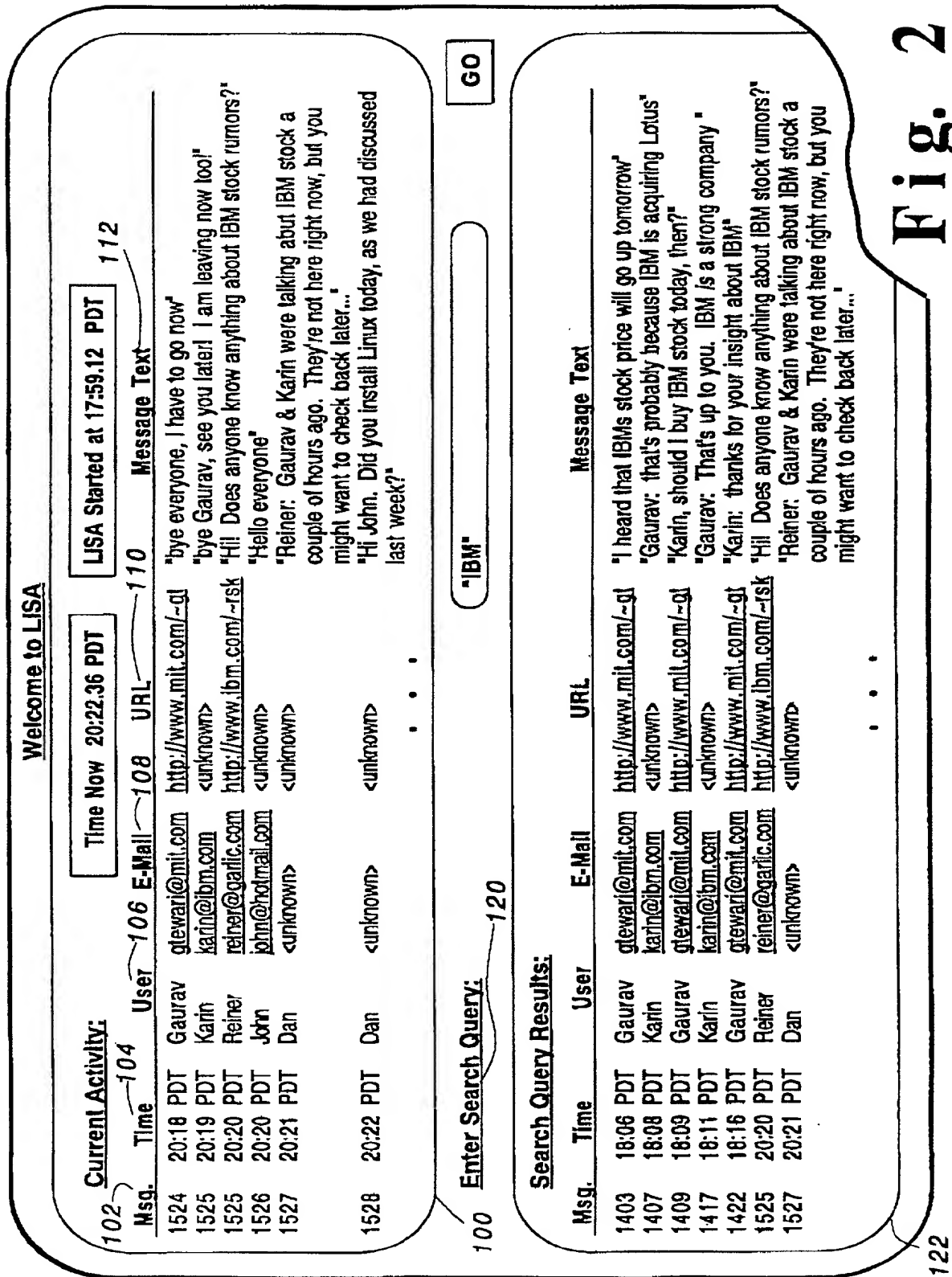
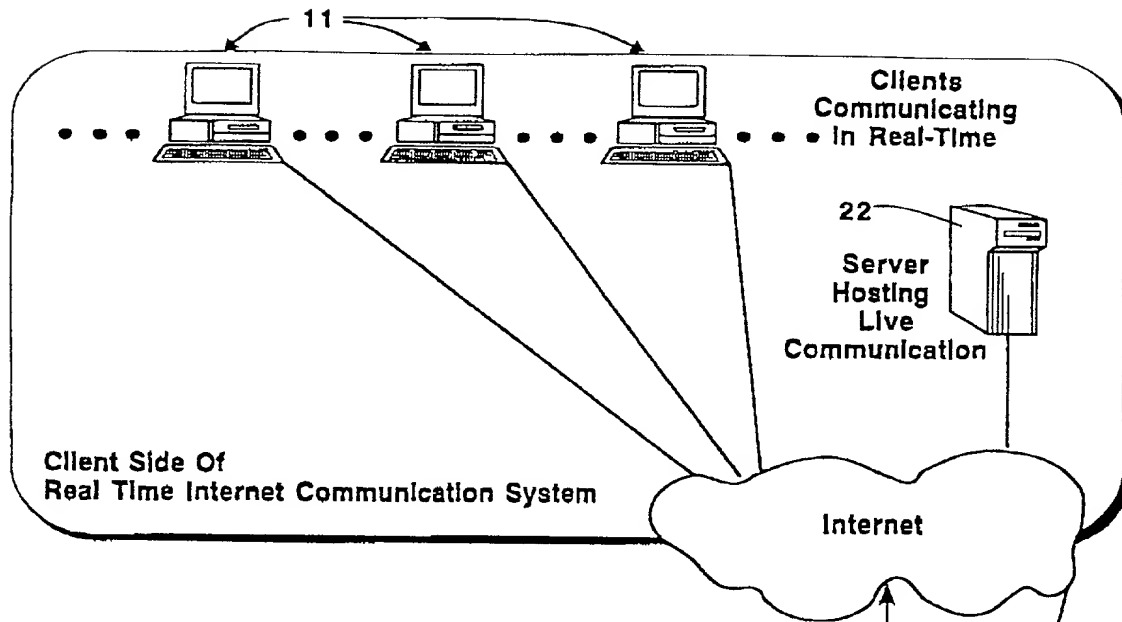
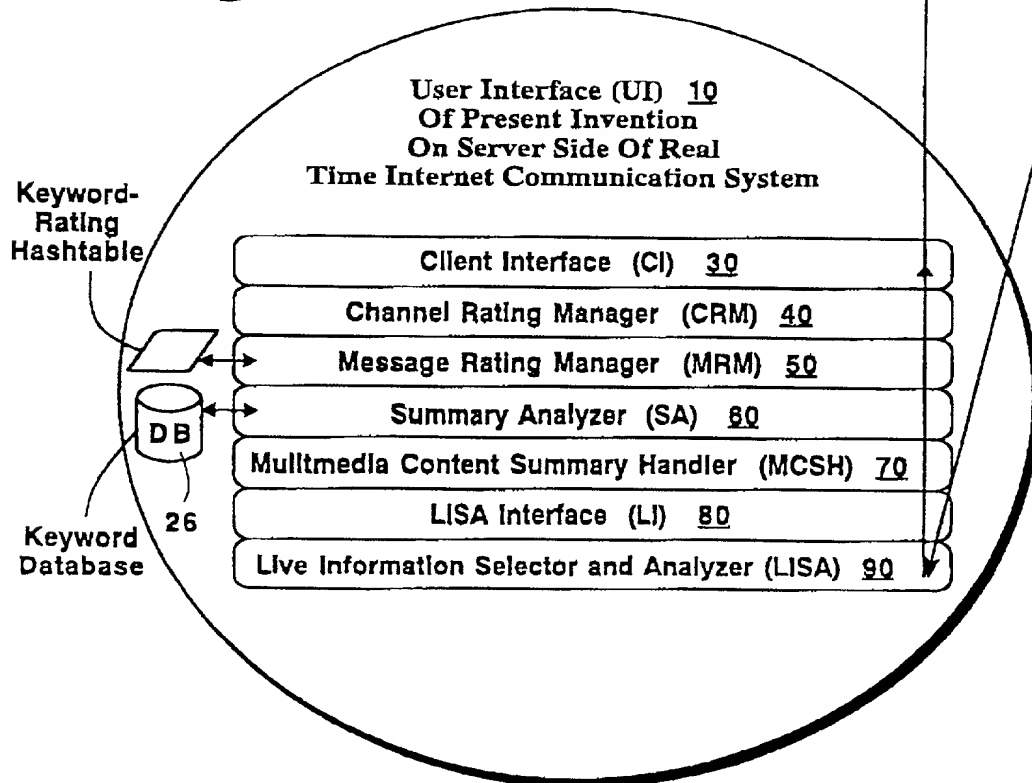


Fig. 2



**Fig. 3**



## MULTIPLE INVENTORS

IBM Docket No: AM9-99-0219

### Declaration and Power of Attorney for Patent Application

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name; I believe I am an original, first and joint inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled:

**PLATFORM FOR INTERNET BASED REAL-TIME COMMUNICATION CONTENT SELECTION**

the specification of which (check one)

☒

is attached hereto.

☐

was filed on \_\_\_\_\_ as Application Serial No. \_\_\_\_\_ and was amended on \_\_\_\_\_.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability as defined in 37 CFR §1.56.

I hereby claim foreign priority benefits under 35 USC §119(a)-(d) or §365(b) of any foreign application(s) for patent or inventor's certificate, or §365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s):

Number	Country	Day/Month/Year	Priority Claimed
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I hereby claim the benefit under 35 USC §119(e) of any United States provisional application(s) listed below:

Application Number	Filing Date
--------------------	-------------

I hereby claim the benefit under 35 USC §120 of any United States application(s), or §365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 USC §112, I acknowledge the duty to disclose information material to the patentability of this application as defined in 37 CFR §1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application:

Prior U.S. Applications:


Serial No.	Filing Date	Status (patented, pending, abandoned)
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I hereby appoint the following attorneys and/or agents to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: Anthony P. DeLio (Reg. No. 18,729); Peter W. Peterson (Reg. No. 31,867); John J. Tomaszewski (Reg. No. 26,241); Robert Curcio (Reg. No. 44,638); Thomas R. Berthold (Reg. No. 28,689); Richard M. Ludwin (Reg. No. 33,010); Marc D. McSwain (Reg. No. 44,929); Alison D. Mortinger (Reg. No. 39,306); Khanh Q. Tran (Reg. No. 41,352).

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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